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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,104	09/18/2001	Graham J. Broad	Q63519	9254

7590 01/24/2003  
Sughrue Mion Zinn Macpeak & Seas  
2100 Pennsylvania Avenue N W  
Washington, DC 20037-3213

EXAMINER

TAKAOKA, DEAN O

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 01/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/857,104	Applicant(s) BROAD ET AL. <i>ju</i>	
	Examiner Dean O Takaoka	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20, 22-27 and 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-27 and 29 is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-17, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 8 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>8</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Drawings*

- i) The drawings are objected to because the figures appearing in drawing pages 5/7 – 7/7 do not include corresponding figure numbers (i.e. Figure 5, Figure 6, et al.).
- ii) The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following must be shown or the feature(s) canceled from the claim(s). **No new matter should be entered.**

#### Claim 11:

“discrete members” (e.g. “wherein said hemicycle-shaped planar sections are in the form of discrete members attached proximate said edges of said aperture means”).

It does not appear any “hemicycle-shaped planar sections are in the form of discrete members”. The hemicycle shaped portions 8 – 11 (Fig. 2) appear as part of the aperture, “integral”, and not as an additional or separate “discrete members” and further disclosed by the Applicant “integral” (page 4, line 16).

#### Claim 18:

“cooling fin/s” (e.g. “wherein at least one resonator element includes a plurality of cooling fins operatively attached thereto”).

The “cooling fins” attached to a resonator is not shown in the drawings, further disclosed as “not shown” by the specification (page 5, lines 2-3).

iii) A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The applicant is required to provide a copy of the drawings with proposed drawing changes **marked in red ink** as required by 37 CFR 1.121(d).

### ***Claim Objections***

Claim 5 is objected to because of the following informalities: Claim 5 recites "3 stacked resonator elements" (page 7, line 26). The Examiner requests the numeral "3" replaced by the word "three" (e.g. [3] --three-- stacked resonator elements) to avoid any possible confusion with respect to drawing reference numbers and/or claim numbers.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). The term "discrete members" in claim 11 is used by the claim to mean "discrete members," while the accepted meaning is "non-discrete member."

Art Unit: 2817

The term “discrete members” is used to signify a separate entity, other than that integrally formed. The hemicycle shaped members (8-11 – Fig. 2) appear integrally formed in the plate or wall and disclosed by the Applicant as “integral” (page 4, line 16). The hemicycle shaped members further integrally comprise the aperture, thus the hemicycle shaped members are not separate “discrete members” but integral and comprise the aperture, thus the term is repugnant.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Marié (U.S. Patent No. 2,999,988).

**Claim 1:**

Marié (Fig. 9) shows a waveguide directional filter arrangement comprising input waveguide means (1) and an output waveguide means (15) connected by cavity resonator means (39 – 41), where the input waveguide means and output waveguide means each include broad wall sections joined by narrow wall sections whose aspect ratio is greater than 2:1 (where the rectangular waveguides 1 and 15 show an aspect ratio greater than 2:1).

**Claim 2:**

Where each waveguide means includes an aperture means (irises 27 – 30) arranged to couple its associated waveguide means to a common resonator means, and where edges of each aperture means include inwardly extending sections (where any of the configuration of the irises, shown in Figs. 6 – 10, may be defined with the edges including inwardly extending sections).

Claim 4:

The input waveguide means and output waveguide means each include broad wall sections joined by narrow wall sections whose aspect ratio is greater than 2:1, each waveguide means includes an aperture means arranged to couple its associated waveguide means to a common resonator means, and where edges of each aperture means include inwardly extending sections (discussed in the reasons for rejection of claims 1 and 2 above).

Claim 20:

Where the resonator element is symmetric (where the symmetrical resonators are shown, e.g. Figs. 1 and 2, further where symmetrical irises are taught – col. 6, lines 17-34).

Claims 4 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Marié (U.S. Patent No. 2,939,093).

Claim 4:

Marié (Figs. 1 and 2) shows a waveguide directional filter arrangement comprising input waveguide means (15) and an output waveguide means (16)

connected by cavity resonator means comprising at least one resonator element (18), the input waveguide means and output waveguide means each include broad wall sections joined by narrow wall sections whose aspect ratio is greater than 2:1 (shown by dimensions a and b = 0.25, e.g. a 4:1 aspect ratio – col. 5, line 66 to col. 6, line 55 and in particular, the equation result shown in col. 6, line 30), each waveguide means includes an aperture means (apertures 3 and 4 in Fig. 1) arranged to couple its associated waveguide means to a common resonator means, and where edges of each aperture means include inwardly extending sections.

Claim 17:

Where the aspect ration of the wall sections is approximately 4:1 (discussed in the reasons for rejection of claim 4 above).

Claims 2, 9, 10, 12, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ando (U.S. Patent No. 3,845,415).

Claim 2:

Ando shows a waveguide directional filter arrangement comprising input waveguide means (i.e. 301 – Fig. 3a) and an output waveguide means (opposite 301) where each waveguide means includes an aperture means (irises 308,309 and 311,312) arranged to couple its associated waveguide means to a common resonator means, and where edges of each aperture means include inwardly extending sections (where the shapes of 308, 309 are defined with the edges including inwardly extending sections).

Art Unit: 2817

Claim 9:

Where the inwardly extending sections are approximately hemicycle-shaped planar sections (where irises 308, 309 have semi-circular, e.g. hemicycle, shaped portions extending to the middle point of the planar surface).

Claim 10:

Where the hemicycle-shaped planar sections are integral with the aperture means (where the hemicycle-shaped planar sections is the aperture, e.g. iris).

Claim 12:

Where the inwardly extending sections are hemicycle-shaped portions of cylinders, whose axes are normal to the aperture's major plane (where Ando shows, e.g. Fig. 3b, the inwardly extending sections are hemicycle-shaped portions of cylinders, whose axes are normal to the aperture's major plane).

Claim 13:

Where the cylinders are integral with the aperture means (where Ando shows, e.g. Fig. 3b, where the cylinders are integral with the aperture means).

Claim 14:

Where the cylinders are in the form of discrete members attached proximate the edges of the aperture means (where the cylinder waveguides 302, 303 are discrete from 304 and proximate the edges of the aperture means 308, 309).

Claims 3 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ranghelli (U.S. Patent No. 4,327,330).



Claim 3:

Ranghelli (best shown in Fig. 1) shows a waveguide directional filter arrangement comprising input waveguide means (e.g. signal in) and an output waveguide means (e.g. signal out) connected by cavity resonator means comprising at least three stacked resonator elements (resonators 6), where at least one pair of non-adjacent resonator elements include additional coupling means (e.g. amplifier coupler 3, where probes 2 and 5 are disclosed to couple, col. 2, line 66 to col. 3, line 18) to couple the non-adjacent resonator elements (shown in Fig. 1 where exterior non-adjacent resonator are coupled; further where Ranghelli teaches other waveguide forms such as rectangular waveguides and irises – col. 3, lines 46-61).

Claim 19:

Where at least one resonator element includes at least one tuning element means (where all resonator shown by Ranghelli are tuned by coupling amplifiers 3, in that the amplifier outputs are combined in a combiner which is configured to provide complementary phase changes with respect to the phase changes of the divider such that all paths are equal in phase, col. 2, lines 50-64, thus resonators inherently provided with tuning means).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marié (U.S. Patent No. 2,939,093) in view of Ranghelli.

It is noted that Marié (U.S. Patent No. 2,939,093) will be disclosed as ('093) hereafter to avoid any confusion with Marié (U.S. Patent No. 2,999,988) hereafter disclosed as ('988).

Claim 5:

Marié ('093) shows a well-known waveguide directional filter arrangement comprising at least one resonator element, discussed in the reasons for rejection of claim 4 above (where Marié shows a parallel pair of resonators – Fig. 4).

Marié does not show additional coupling in at least one non-adjacent resonator elements.

Ranghelli shows a well-known waveguide directional filter comprising three stacked resonators (e.g. two parallel waveguides of three resonators each) including coupling in at least one non-adjacent resonator elements.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the waveguide disclosed by Marié ('093) with the coupler including coupling in at least one non-adjacent resonator elements disclosed by Ranghelli. Such a modification would have realized the advantageous benefit of providing coupling to divider or combine a signal (Ranghelli – col. 2, line 66 to col. 3, line 18) thus suggesting the obviousness of the modification. The further modification, incorporating three stacked resonators (shown by Ranghelli), is a well-known and obvious modification, to make any single resonator element into multiple resonator

elements (as exemplified by Marié U.S. Patent No. 2,999,988), thus suggesting the obviousness of the modification.

Claim 6:

Where the additional coupling means comprises a first pair of coupling elements (probes 2, 5 of Ranghelli – Fig. 1) each of which extend into a respective non-adjacent resonator element, the coupling elements being connected together by a first external transmission line means (where the probes 2, 5 are transmission lines and both connected to amplifier 3).

Claim 7:

Including a second pair of coupling elements each of which extend into a respective non-adjacent resonator element, the coupling elements of the second pair of coupling elements being connected together by a second external transmission line means (shown by Ranghelli in Fig. 1 where probes 2 and 5 are both transmission lines, discussed in the reasons for rejection of claim 5 above), the first pair of coupling elements and the second pair of coupling elements being disposed in a pre-determined spaced relationship (inherent in that the probes 2, 5 connected to amplifier 3 would inherently be disposed in a pre-determined spaced relationship; further where Ranghelli discloses the coupling being obtained by spatial relationship – col. 2, line 66 to col. 3, line 18).

***Allowable Subject Matter***

Claims 22 – 27 and 29 are allowed.

Hudspeth shows two cavity resonators comprising a slit and a movable slug but does not teach where the slug can be engaged and slideably manipulated into a position in which electrical contact between the slug and the edges of the slit produces a desired change in effective electrical length of the slit.

While it may be arguable that the slug of Hudspeth is able to be manipulated, Hudspeth teaches that the bushing 92 is made of an electrically insulating material (col. 6, line 63-65), further where the rods 90 and slits 88 each propagate different TE modes, thus the slugs not in electrical contact between the slug and the edges of the slit produces a desired change in effective electrical length of the slit, nor would it have been obvious to combine any of the prior art to meet each and every limitation of the independent claims, therefore independent claim 22 and the dependent claims therein are found in condition for allowance.

Claims 8 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 8:

The prior art of Ranghelli shows a first and second pair of coupling elements but does not show the coupling elements disposed at approximately 90° to each other.

Claim 18:

The prior art of Marié ('093) shows cooling fins (28, 28', 33 – Fig. 4) but does not show a plurality of cooling fins operatively attached to the resonator element.

**Conclusion**

Due to the indefinite nature of claims 11 and 15, no art has been applied to those claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

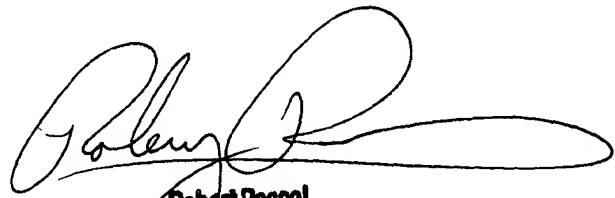
Hudspeth – shows an adjustable coupling slug.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O Takaoka whose telephone number is (703) 305-6242. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

dot  
January 20, 2003



Robert Pascal  
Supervisory Patent Examiner  
Technology Center 800